

What is claimed is:

1. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, comprising:

5 a mandrel having an upper end adapted for connection to a string of drill pipe and a bore therethrough;

a tool body having a lower end adapted for connection to a string of drill pipe, said tool body carried by said mandrel, said mandrel and said tool body axially moveable relative to one another;

10 a plurality of connection means positioned on said tool body for releasably connecting said tool body to a casing hanger;

a plurality of connection means positioned on said tool body for releasably connecting said tool body to a seal assembly;

15 a pressure responsive shuttle piston on said mandrel, said shuttle piston axially moveable to urge said seal assembly into the annulus between said casing hanger and a wellhead in which said casing hanger is landed; and,

said mandrel having a valve means positioned in said mandrel bore, said valve means operable between open and closed positions by axial movement of said mandrel relative to said tool body.

20 2. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 1, wherein:

said tool body includes a main body, an upper body and a lower body; and,

25 said main body supporting said plurality of connection means for releasably connecting said tool body to a seal assembly.

3. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 2, wherein:

30 said lower body includes said plurality of connection means for releasably connecting said tool body to a casing hanger.

4. An installation tool for landing a casing hanger in a wellhead and setting a seal

assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 3, wherein:

said upper body includes a frangible connection means securing said upper body to said pressure responsive shuttle piston prior to said seal assembly being urged into the annulus between said casing hanger and said wellhead.

5           5. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 4, wherein:

10           said pressure responsive shuttle piston further includes a plurality of actuator rods secured to an actuator rod head, said head connected to said shuttle piston by a frangible connection means, said frangible connection means being broken when said seal is urged into the annulus between said casing hanger and said wellhead.

15           6. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 5, wherein:

          said lower body includes a plurality of latching dogs spaced circumferentially thereon, said latching dogs urged into engagement with said casing hanger by axial movement of a latching ring positioned on said mandrel when said mandrel is axially moved relative to said lower body.

20           7. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 6, wherein:

25           said tool body and said shuttle piston including a plurality of flow return passages, said flow return passages cooperating with flow return passages in said casing hanger to allow cementing of a casing string attached to the lower end of said casing hanger prior to urging said seal assembly into the annulus between said casing hanger and said wellhead assembly.

30           8. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 7, wherein:

          said lower body includes operating means for operating said valve means

positioned in said mandrel bore, said operating means including a ball pin for operating said valve means between said open and closed positions.

9. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 8, wherein:

said plurality of connection means positioned on said tool body for releasably connecting said tool body to a seal assembly includes a plurality of latching segments for retaining said seal assembly in a position axially displaced above said casing hanger during installation, said plurality of latching segments circumferentially spaced around said main body of said tool body.

10. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 9, wherein:

said plurality of latching segments for retaining said seal assembly are released from said seal assembly by pressure applied in the bore of the mandrel which shifts the shuttle piston relative to the tool body.

11. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 10, wherein:

said frangible connection means securing said upper body to said pressure responsive shuttle piston prior to said seal assembly being urged into the annulus between said casing hanger and said wellhead is a plurality of tensile bolts.

12. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, comprising:

a mandrel having a threaded upper end for connection to a string of drill pipe and a bore therethrough;

a tool body having a threaded lower end for connection to a string of drill pipe, said tool body carried by said mandrel;

said tool body having a main body, an upper body and a lower body, said mandrel and said tool body axially moveable relative to one another;

a plurality of latching dogs positioned circumferentially on said lower body of said tool body for releasably connecting said tool body to a casing hanger;

a plurality of latching segments circumferentially spaced on said lower body of said tool body for releasably connecting said tool body to a seal assembly;

5 a pressure responsive shuttle piston on said mandrel, said shuttle piston axially moveable to urge said seal assembly into the annulus between said casing hanger and a wellhead in which said casing hanger is landed; and,

said mandrel having a ball valve positioned in said mandrel bore, said ball valve operable between open and closed positions by axial movement of said mandrel relative  
10 to said tool body.

13. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 12, wherein:

said upper body includes a plurality of tensile bolts circumferentially spaced thereon  
15 securing said upper body to said pressure responsive shuttle piston prior to said seal assembly being urged into the annulus between said casing hanger and said wellhead.

14. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 13, wherein:

20 said pressure responsive shuttle piston further includes a plurality of actuator rods secured to an actuator rod head, said head connected to said shuttle piston by a plurality of shear bolts, said plurality of shear bolts being broken when said seal is urged into the annulus between said casing hanger and said wellhead.

15. An installation tool for landing a casing hanger in a wellhead and setting a seal  
25 assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 14, wherein:

said plurality of latching dogs positioned circumferentially on said lower body of said tool body for releasably connecting said tool body to said casing hanger urged into engagement with said casing hanger by axial movement of a latching ring positioned on  
30 said mandrel when said mandrel is axially moved relative to said lower body.

16. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 15, wherein:

5       said tool body and said shuttle piston including a plurality of flow return passages, said flow return passages cooperating with flow return passages in said casing hanger to allow cementing of a casing string attached to the lower end of said casing hanger prior to urging said seal assembly into the annulus between said casing hanger and said wellhead assembly.

10       17. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 16, wherein:

      said lower body includes a ball pin for operating said ball valve positioned in said mandrel bore by axial movement of said mandrel relative to said tool body.

15       18. An installation tool for landing a casing hanger in a wellhead and setting a seal assembly in the annulus between the casing hanger and wellhead without requiring rotation of the drill pipe string, according to Claim 17, wherein:

      said plurality of latching segments for retaining said seal assembly are released from said seal assembly by pressure applied in the bore of the mandrel which shifts the shuttle piston relative to the tool body.